NMFS Responses to Public Comments
on the
Proposed Puget Sound Salmon Recovery Plan

November 17, 2006

CONTENTS

Response to Public Comments Received on the Proposed Puget Sound Salmon Recovery Plan

The Shared Strategy for Puget Sound, a nonprofit organization that coordinates recovery planning for Puget Sound salmon, submitted a Draft Recovery Plan for Puget Sound Chinook Salmon (the Shared Strategy Plan) to NOAA's National Marine Fisheries Service (NMFS) in December 2005. NMFS reviewed the draft and prepared a Supplement which together with the Shared Strategy Plan constitute the proposed Recovery Plan (Recovery Plan). On December 27, 2005, NMFS published a Federal Register Notice (70 FR 76445) soliciting comment on the proposed Recovery Plan. The public comment period was to be closed February 27, 2006, and was extended to March 13, 2006 (71 FR 10652). To facilitate public participation, NMFS made the Shared Strategy Plan and draft Supplement available for public comment on the NMFS website (http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Puget-Sound/PS-Chinook-Plan.cfm).

NMFS received 98 comment letters by mail, fax, or email on the Shared Strategy Plan and draft Supplement from a variety of sources, including the following: local, state, and Federal government entities, tribes, nonprofit organizations and interest groups, and interested individuals. Public hearings were held between February 7 and February 21 in Sequim, Lacey, Seattle, and Anacortes. All comments were transcribed. Comments received dealt with the NMFS Supplement, Volume 1 of the Shared Strategy Plan (Draft Regional Recovery Plan), and Volume 2 of the Shared Strategy Plan (local watershed chapters).

NMFS reviewed all comments received for substantive issues and new information. NMFS addresses as many of them as practicable in the following summary and has amended the Supplement as appropriate. Due to the breadth, depth, and detail of the comments, it was not possible to respond individually to all, so they were summarized. For readers' convenience we have assigned comments to major issue categories and, where possible, have combined similar comments into single comments and responses. Detailed editorial comments or minor corrections are not addressed here; instead, the Shared Strategy and NMFS will issue an Errata bulletin that will be posted on both websites early in 2007.

Together, the Shared Strategy Plan and the NMFS Final Supplement constitute the final ESA Recovery Plan for Puget Sound Chinook Salmon (the Recovery Plan). The final Supplement supersedes the draft Supplement. The ESA Recovery Plan for Puget Sound Chinook Salmon is available at http://www.nwr.noaa.gov/Salmon-Recovery-Planning/ESA-Recovery-Plans/Index.cfm and http://www.sharedsalmonstrategy.org/.

NMFS acknowledges the high quality of the comments and the great care with which so many individuals and organizations responded to the Shared Strategy Plan and Supplement. Salmon are important to the people of the Pacific Northwest, and NMFS recognizes that public participation is essential to the task of protecting this precious natural resource. Most commenters offered praise and support for implementation of the Recovery Plan along with detailed and thoughtful critiques. The Shared Strategy Plan is the product of four years of work on the part of numerous state, Tribal, local, and Federal organizations and individuals throughout the Puget Sound region, supported by funding from state and Federal sources through the Salmon Recovery Funding Board and

additional funding from local jurisdictions. As such, the Recovery Plan is a remarkable public achievement, and NMFS intends to move forward to the long-term collaboration that will be necessary to implement it.

Many organizations and agencies offered support to implement the Recovery Plan, including finding and securing funding, collaborating on local projects, further research and development of innovative strategies, defining incentives for private and public landowners, participating in the adaptive management process, and many other aspects of the effort that will be required. NMFS welcomes these offers and commitments and looks forward to working with the organizations and individuals involved.

RECOVERY GOALS/CRITERIA

Comment 1: One commenter raised the concern that the individual watershed chapters seem to set recovery goals based on planning targets established by co-managers instead of goals that are consistent with the PSTRT's viability criteria. The commenter also said that the goals seem to be primarily focused on abundance and productivity, as opposed to focusing on all four of the PSTRT's viability attributes.

Response: Many of the individual watershed chapters did set recovery goals based on co-managers' analyses. However, it is not correct to state that co-manager goals are 'not consistent with' PSTRT viability criteria. The PSTRT planning ranges for viability use a set of decision rules to combine information from the co-manager analyses and two other PSTRT analyses; therefore, by definition, the PSTRT viability criteria include the co-manager results. The watersheds' goals do appear to focus more on abundance and productivity—because they are numerical—but watersheds also have narrative statements concerning their spatial structure and diversity goals.

Comment 2: One commenter raised the concern that the Plan, following the PSTRT recommendation, requires only two to four populations in each biogeographic region to achieve "low risk" status, while in other regions of the Pacific Northwest, other TRTs have recommended a higher standard.

Response: The TRT in each domain is composed of scientists who, as a group, have expertise in both conservation biology and associated fields in general as well as detailed knowledge of the biology and ecology of populations unique to each domain. Each TRT is using the same basic framework and methods to develop these criteria, but the details vary to some degree among the independent TRTs. The Puget Sound TRT developed ESU level viability criteria that call for 2-4 populations within each of five geographic strata to be at low risk of extinction and that the remaining populations have sufficient numbers, diversity, and distribution of fish so that ecological function is provided to support low-risk populations and ESU viability. These criteria are similar to the ESU level criteria developed by other TRTs. For example, the Lower Columbia and Willamette TRT's criteria require that two populations per geographic strata be at low risk of extinction, and the remaining populations be at no more than a moderate risk of extinction. The Interior Columbia and Oregon Coastal TRTs' criteria recommend that at

least half and no fewer than two populations per strata be at low risk of extinction. In practice, these criteria are all expected to result in similar ESU-level viability goals.

Comment 3: One commenter wondered whether recovery criteria would be subject to revision/modification based on adaptive management.

Response: See Supplement Section 2.3.1, Objective, Measurable Criteria for Delisting, which states: As the recovery plan is implemented, additional information will become available along with new scientific analyses that can increase certainty about whether the threats have been abated, whether improvements in population and ESU status have occurred for Chinook salmon, and whether linkages between threats and changes in salmon status are understood. These recovery criteria and the factors for delisting will be assessed through the adaptive management program under development for the Plan, and there will be a thorough review of the criteria at the five and ten-year status review of the ESU.

Comment 4: One commenter suggested that recovery goals should be set according to individual watersheds' potential for restoration.

Response: If the reviewer means that recovery goals should account technically for the ability of the habitat to support salmon, such information is included in PSTRT viability criteria. One of the three analyses that the TRTs combined in their decision frameworks to generate planning ranges for viability is an 'intrinsic potential' or an estimate of the historical capacity of the watersheds to support Chinook. These estimates are used to set upper bounds on the viability model results for how many fish are needed to avoid extinction. See population viability criteria documentation [http://www.nwfsc.noaa.gov/trt/puget/trtpopesu.pdf] for more details.

HABITAT

Water Issues

Comment 5: One commenter noted that the designation of Outstanding National Resource Waters under the Clean Water Act provides a means to preserve currently healthy rivers and streams and recommended that NMFS include this in the final Recovery Plan as a regulatory tool to protect high quality habitat.

Response: NMFS agrees that protection of functioning habitat, particularly high quality habitat, is critically important to salmon recovery. NMFS supports the use of the Outstanding Natural Resource Waters program as appropriate to protect remaining high quality habitat in Puget Sound.

Comment 6: Several comments dealt with the importance of water quantity and water allocation to recovery efforts. Comments included concern that gaps exist between needed flows and instream flows, concern that there is no plan as to how to achieve necessary instream flows, the need for the Washington Department of Ecology to keep its

schedule of having instream flows set by the end of 2006, concerns that some previously established flows may be inadequate to meet recovery objectives, and the wish for NMFS to develop a water budget for the region and identify strategies for restoring instream flows. One commenter suggested the Recovery Plan should support the use of reclaimed water and reflect commitments from state agencies to avoid actions that have the potential to exacerbate instream flow problems.

Response: NMFS agrees with many commenters who stated that instream flow protection and enhancement are necessary to support recovery of threatened Puget Sound Chinook salmon. The Recovery Plan advocates defining instream flow limits for recovery and setting up a program to achieve them. Ten public comments address instream flows. One of the ten contests the existing instream flow approach as too onerous; however, the other nine commenters stated a need for setting and following instream flows that support salmon recovery.

As described in the Instream Flow Tool Kit (American Rivers and WEC 2003), there is a long history of state-led efforts for evaluating and setting instream flows in various watersheds in Puget Sound. While there has been incremental progress in some watersheds, the Washington State Governor's Salmon Office summarized the currently poor conditions to which salmon are exposed. The 2004 State of Salmon Watersheds Report lists the Nooksack, Snohomish, Lake Washington, Green, White, Puyallup, Dungeness and Elwha as "water critical basins" that are over-appropriated watersheds where more water could be withdrawn from rivers and streams, especially in late summer and early fall when flows are naturally low. The Stillaguamish and lower Skagit watersheds were listed as "low flow," experiencing significant pressure for increased water use and rapidly declining flows for fish. Of all the Puget Sound Chinook natal watersheds, only the mid-Hood Canal and upper Skagit were not listed with flow problems for salmon. NMFS believes that a necessary component in addition to the regional strategy on instream flow protection is that the Washington Department of Ecology establish site-specific instream flow protection programs and/or regulations to support salmon recovery.

Given the certainty of increasing demand on Puget Sound water supplies, NMFS believes there is an urgent and inescapable need to ensure sufficient instream flows to recover Puget Sound Chinook salmon. The public comments on this issue highlight the urgency of putting in place effective measures to protect and enhance flows throughout the ESU. Water quantity management and regulation in Washington is carried out under the laws of the state as administered by the Department of Ecology. NMFS strongly encourages the Department of Ecology to act swiftly to protect instream flows and to work with Puget Sound tribes, local governments, and other interested parties to implement water conservation and flow restoration programs. The probability of salmon recovery being successful in Puget Sound will be substantially increased if an effective instream flow management program is implemented as soon as possible.

Comment 7: One commenter suggested the Recovery Plan should identify where dissolved oxygen problems occur and set deadlines for TMDLs to be developed.

Response: NMFS agrees that additional information is necessary about where water quality impacts occur in Puget Sound and how they can rapidly be ameliorated. NMFS supports ongoing efforts by the Department of Ecology and U.S. Environmental Protection Agency to identify water quality problems from stormwater runoff and non-point sources and develop solutions to them. Further, NMFS agrees that additional funds could accelerate the implementation of programs designed to reduce contaminant loading to streams, including establishing TMDLs.

Forest Practices

Comment 8: Some commenters expressed concern that the Recovery Plan did not adequately address the need to improve forest practices, while others felt the Recovery Plan did not give enough credit to previously established agreements concerning forest practices.

Response: While forest practice actions were summarized in Volume 1 of the Shared Strategy Plan, the recently approved Forest Practice Rules Habitat Conservation Plan (FPHCP, signed June 5, 2006) includes an extensive record that describes how implementing those conservation measures provides a high likelihood of contributing to recovery of watershed processes that support salmon and trout statewide. In the context of the Recovery Plan, it is significant that several hundred thousand acres of privately managed timberlands in Puget Sound will be managed according to the FPHCP. Over time, watershed processes related to riparian function, sediment delivery, and channel condition are expected to measurably improve. Improving conditions in forested watersheds will likely contribute to salmon recovery.

Several commenters had specific questions about how NMFS would address the potential for adverse effects on salmon habitats from commercial forestry activities conducted on specific lands regulated by Washington State under the "20-acre exemption." NMFS added a specific condition to the ESA §10(a)(2)(B) permit to address this issue [http://www.nwr.noaa.gov/Salmon-Habitat/Habitat-Conservation-Plans/Washington-Forest-Practices/Index.cfm]. NMFS believes that by adding this condition to the permit, the potential for adverse effects is satisfactorily minimized.

Comment 9: One set of comments cited concerns that the Recovery Plan does not adequately recognize United States Forest Service (USFS) lands or programs, such as the Aquatic Conservation Strategy. One concern is that this lack of recognition could impact the funding and support of forest watershed restoration programs; recognizing the contribution of USFS to recovery may help strengthen support for the Northwest Forest Plan.

Response: NMFS agrees. Also see response to Comment #8. The Federal lands are managed according to the Northwest Forest Plan's Aquatic Conservation Strategy. The ACS has four key elements: riparian reserves, key watersheds, watershed analysis and

watershed restoration. Together these can provide comprehensive, long-term protection of aquatic habitat.

Nearshore Regional Chapter

Comment 10: Commenters affirmed the importance of nearshore habitat; one recommended placing high priority on study of fish use of nearshore, monitoring nearshore water quality, and addressing data gaps to further define recovery actions and priorities. Another commenter asked for more specific and detailed recommendations for goals and actions regarding nearshore habitat, as well as a detailed adaptive management plan.

Response: NMFS agrees that we have large data gaps in our understanding of nearshore habitat as well as fish use of the nearshore, including cross regional use. Addressing these data gaps is a first priority for defining both regional and cross-regional recovery actions and priorities. Further, monitoring water quality in the nearshore should include selected sites in Puget Sound with potential for degraded conditions from non-point sources, e.g., nutrients and elements that control algae blooms.

There are several on-going studies of juvenile salmon use of Puget Sound nearshore areas. Researchers funded through the Pacific Coastal Salmon Recovery Fund (PCSRF) and by NMFS have conducted such studies in the south Puget Sound inlets, Nisqually Reach, the East Kitsap inlets and passages, Skagit Bay, Hood Canal, Saratoga Passage, and Bellingham Bay. Information gathered through these studies is being used to determine where listed Chinook salmon migrate and rear in the Sound, and to identify high value areas where protective measures are of paramount need.

Comment 11: One commenter cited several potential problems with the Regional Nearshore Approach portion of the Recovery Plan. The commenter believes that some evaluations in the Nearshore Approach suffer from a lack of precision and conflict with readily available information; that key information, including information NMFS considered in previous ESA reviews, about the Cherry Point herring population decline has been overlooked; that the Nearshore Approach fails to adequately explain existing regulatory programs and instead simply dismisses the programs as inadequate; and that some of the recommended actions should be reconsidered as they are inconsistent with the current knowledge of the environment in the Cherry Point area.

Response: In the nearshore chapter prepared by the Puget Sound Action Team, special attention was drawn to the Cherry Point Pacific herring spawning stock. Although the recent status reviews were not cited, they were considered in preparation of the Shared Strategy Plan and in the discussions of the South Georgia Basin. The second status review was not cited as this was published after the Shared Strategy Plan was drafted.

Attention was drawn to the Cherry Point Pacific herring spawning stock because of herring's considerable ecological importance in West Coast coastal ecosystems and because this spawning stock has declined to a small fraction of its historical levels. There

is no doubt that herring are of considerable ecological importance to the Puget Sound ecosystem as a whole and to the southern Georgia Strait ecosystem. The second BRT (Biological Review Team) that was convened to evaluate the status of Cherry Point herring stated in its recent status review of this spawning stock that "Pacific herring play important roles in the Georgia Basin ecosystem" (see page 153 Gustafson et al. 2006). They further noted that "Pacific herring are important forage fish for Pacific salmon and killer whales, so collapse of the Pacific herring DPS could have serious negative effects on these other protected species" (see Gustafson et al. 2006, p.153). We also note that many other fish, bird, and mammal species eat herring in Puget Sound and in the southern Georgia Strait, some of which eat herring at multiple life stages.

It is also clear that this spawning stock has declined to a small fraction of its historical levels. The second BRT reviewed factors affecting herring in this region, focusing on information prepared for the first status review. They did "not consider threats or factors for decline in a comprehensive way." Although they review this information, they did not reach a definitive conclusion about the primary cause of the decline. The BRT stated, "In contrast, no specific risk factor has been identified as the primary cause of decline in the portions of the Georgia Basin Pacific herring DPS that are of most concern" (Gustafson et al. 2006, p.152). It is clear that a number of factors (or combination of factors) could be responsible for the decline in the Cherry Point herring population. As pointed out in the response letter, the second BRT (and the first BRT, Stout et al. 2001) opted not to list Cherry Point herring under the Endangered Species Act. Although they concluded that Cherry Point Pacific herring were discrete, they concluded that they were not significant to the taxon of Pacific herring as a whole as defined by Federal policy.

Given the strong ecological connections between Chinook salmon and the decline in abundance of the Cherry Point Pacific herring spawning population, we believe it is prudent to consider status, management, and recovery of herring in this region within the context of recovery of the Puget Sound Chinook salmon ESU. Therefore, we think it is prudent that we continue to take actions to ensure that Pacific herring that spawn in this region are adequately protected from further harm and continue to seek to understand why this population has declined such that rebuilding of this population could take place.

Comment 12: One commenter suggested the need to better integrate the Nearshore Chapter into the individual watershed plans.

Response: NMFS expects that as the Recovery Plan is implemented and adaptive management proceeds, the integration of the nearshore chapter elements into the watershed plans will occur. Watershed groups will need to incorporate additional information about the role of nearshore habitat in salmon life cycle becomes available, and to adjust their implementation actions and sequencing priorities accordingly.

Hatcheries

Comment 13: Two Tribes submitted comments related to the importance of continuing hatchery programs until the restoration of wild fish can take place. One Tribe requested

that NMFS clearly support the role of hatchery programs as being consistent with recovery in specific instances.

Response: The Recovery Plan incorporates all anadromous salmon hatchery programs currently being operated in the Puget Sound region by the co-managers for conservation, harvest augmentation, and research purposes. These programs are described in two Hatchery RMPs and 109 Hatchery and Genetic Management Plans (HGMPs) submitted to NMFS by the co-managers for evaluation and determination of their compliance with conservation criteria specified in the ESA 4(d) Rule for listed Puget Sound Chinook salmon. These programs have been continually modified over the duration of their operation to improve their performance in meeting adult fish production objectives, and in more recent years, listed and wild fish conservation requirements.

NMFS recognizes the importance of continuing properly operated hatchery programs in the region as a means to replace lost salmon production and to preserve depleted natural populations. These programs are needed to offset lost fish production resulting from the degraded condition of natural fish habitat and historical overfishing in the Puget Sound region.

It is NMFS policy that recovery of salmonid populations must achieve two goals: (1) the recovery and delisting of salmonids listed under the provisions of the ESA, and (2) the restoration of the meaningful exercise of tribal fishing rights. "It is the agency's view that there is no conflict between the statutory goals of the ESA and Federal trust responsibility to Indian tribes" (Letter from Terry Garcia, Assistant Secretary for Oceans and Atmosphere, to Ted Strong, Executive Director, Columbia Inter-Tribal Fish Commission, July 21, 1998). Additionally, we "will continue to join with states and tribes to develop a comprehensive approach to the restoration of fish and wildlife resources in a manner that fulfills all obligations under Federal law, including trust obligations to Indian tribes" (ibid.).

It has consistently been the view of NMFS that the "comprehensive approach to the restoration of [listed] fish" includes appropriately managed hatchery programs. Those programs, consistent with applicable standards and requirements, such as completed and reviewed HGMPs, are necessary to meet our legislative responsibilities under the ESA, the Magnuson-Stevens Sustainable Fisheries Act, and others, and Federal trust and treaty responsibilities.

The hatchery programs included in the Shared Strategy watershed plans must be operated to be consistent with ESA protective requirements and supportive of habitat and harvest-directed recovery actions specified in the plans. As the condition of habitat improves, the need for mitigation will be reduced.

Comment 14: Several commenters suggested improving hatchery practices by incorporating new methodologies and modernizing hatchery practices. Another suggested curtailing hatchery production where it is impacting wild runs of fish. One commenter suggested the Recovery Plan should better evaluate the hatchery programs and their role

in recovery in Puget Sound. Related to this, one commenter suggested that the legacy and ongoing effects of hatcheries are underestimated.

Response: The Recovery Plan incorporates by reference, and defers to, the co-managers' hatchery RMPs and HGMPs for descriptions of hatchery programs and evaluations of their likely effects on natural-origin populations. On the initiative of co-managers and in response to hatchery reform recommendations provided through an independent scientific review process, the hatchery programs have been modified recently to further reduce the likelihood that they will impair listed Chinook salmon population recovery. A thorough evaluation of the hatchery programs included in the Recovery Plan will be provided in THE NMFS programmatic Puget Sound hatchery EIS and in an ESA 4(d) Rule limit 6 evaluation and recommended determination due for completion in 2007. Included in these evaluations will be findings regarding the likely past and current effects of the hatchery programs on wild fish populations, and in producing adult fish returns for harvest and conservation purposes. For the interim period, the hatchery programs will be operated in a manner that is integrated with habitat and harvest management measures proposed in the Recovery Plan.

Salmon have been propagated in hatcheries within the Puget Sound region since before 1900. The earliest purpose for hatcheries was to produce large numbers of salmon for harvest in commercial fisheries. As salmon habitat was altered or destroyed by dams, forestry, and urbanization, mitigation for lost natural fish production and fishing opportunity became a major purpose for hatchery production. Over the past few decades, the purposes and operations of hatcheries have further evolved to include rebuilding natural-origin populations, preserving genetically unique populations, and reintroducing fish to areas where salmon populations have been extirpated. Evolution of hatchery practices over this period included the continual development and implementation of new practices shown to be successful in meeting specific hatchery program objectives.

The co-managers' hatchery RMPs incorporated by the Recovery Plan summarize some of the more significant changes in hatchery programs designed to optimize fish production and protect wild salmon populations:

- Limiting cross-basin transfers of salmon and steelhead stocks. Once a common practice, cross-basin transfers have largely been discontinued to protect local population genetic adaptations and to reduce the risk of disease transfer.
- Near cessation of fry plants for species other than chum and pink salmon. Until the 1960s, unfed fry plants were a primary release strategy, but they are used today only in rare instances where it is ecologically and genetically appropriate.
- Establishment of fish health programs. Building on the co-managers' fish disease policy, WDFW and the tribes have developed extensive fish health monitoring and treatment programs to ensure the health of hatchery fish.
- Development of improved release strategies. Improved release strategies focus on increasing survival by releasing fish at physiologically appropriate stages and minimizing interaction with natural-origin fish populations that might lead to competition and predation.

- Implementation of recovery programs using hatcheries. Beginning with the Elwha River Chinook program in 1974 and continuing with the White River Chinook program in 1976, Stillaguamish Chinook in 1980, North Fork Nooksack in 1981, Dungeness River Chinook in 1992, and the Hood Canal Summer Chum Salmon Conservation Initiative in 1992, geneticists and fish culturists have been improving techniques for using artificial propagation at hatcheries to prevent extinction and to maintain genetic diversity of critical stocks.

Current hatchery programs have been further modified, or modernized, consistent with the concept of "hatchery reform," defined as the ongoing, systematic application of scientific principles to improve hatcheries for recovering and conserving naturally spawning populations and supporting sustainable fisheries (Hatchery Scientific Review Group 2000). Reform of Puget Sound hatchery programs has occurred using several mechanisms: 1) adjustment of hatchery program actions by the co-managers through application of research, monitoring and evaluation results; 2) evaluation of programs using a Benefit Risk Assessment Process that indicates program actions needing refinement; and, 3) independent scientific review of programs to provide objective and credible technical recommendations for program changes. The latter reform mechanism occurs through application of recommendations provided in 2001-2004 by the Hatchery and Scientific Review Group (HSRG), review comments provided by the Independent Science Panel (ISP), and program reviews by ad hoc independent scientific review panels assembled to address specific issues on a case-by-case basis.

A key component of the hatchery reform approach applied in the Puget Sound region is adaptive management. Adaptive management is a management process that incorporates research, monitoring, and scientific evaluation to allow managers to make good decisions while operating in the face of uncertainty about future circumstances and consequences (Holling 1978, Walters 1986). Adaptive management, and hence modernization, of future Puget Sound hatchery program actions will occur through continued application of research, monitoring, and evaluation findings to ensure that natural fish populations, including listed Chinook salmon, are adequately safeguarded from hatchery-related adverse effects.

NMFS (NMFS 2005) and the individual watershed plans included in the Recovery Plan identify a suite of factors responsible for limiting recovery of listed salmon populations in Puget Sound. In nearly all instances, habitat loss and degradation in freshwater and marine areas required by salmon for survival are identified as key factors in the depletion and current depressed state of wild salmon and steelhead populations in the region. As the Recovery Plan is implemented, these habitat-related limiting factors will be addressed and remedied. In the interim, the hatchery programs in the region will continue to be operated in a manner that reduces the risk of harm to listed fish populations (harvest augmentation hatchery programs) and preserves unique races (conservation hatchery programs). The hatchery programs will be operated to meet these two primary objectives until natural habitat is restored so that the populations can sustain themselves naturally, and mitigation for lost fish habitat and fish production is no longer needed.

Comment 15: Commenter requested that farmed salmon facilities be forced to reduce pollution in Puget Sound, eliminate disease/parasite transfers to native salmon, and allow for zero escapement.

Response: The private salmon and trout aquaculture industry in Washington is currently regulated by stringent operational and siting requirements to protect native fish species and minimize the risk of hazards associated with the operations to ESA-listed salmon populations. The Washington Department of Ecology administers National Pollution Discharge Elimination System permits required by all marine net-pen aquaculture and larger private freshwater fish hatchery operations to minimize and monitor impacts on water quality and aquatic life in the vicinity. All farmed salmon operations must also comply with Washington Department of Fish and Wildlife (WDFW) fish health and fish transfer requirements to minimize the risk of fish disease transfer and amplification to wild fish populations. Salmon farm operators follow existing state regulations regarding application of measures to minimize the likelihood of fish escape into the natural environment. NMFS completed a technical analysis of the effects of salmon aquaculture operations on listed Chinook and summer chum salmon populations in Puget Sound, and found that they do not pose a substantial risk to those ESA-listed stocks. Details regarding likely Puget Sound salmon farming effects can be reviewed in the NMFS report (NOAA Technical Memorandum; NMFS-NWFSC-49): http://www.nwfsc.noaa.gov/assets/25/4212_06162004_130758_tm53.pdf.

Comment 16: Commenter requested a moratorium on the harvest of U.S. and Canada salmon runs, citing over-estimation of Fraser River sockeye salmon run size and escapement as the example of why a moratorium is needed.

Response: Watersheds and salmon populations in Canada are not included as part of the proposed Plan provided for public review and comment. Management of U.S. salmon fisheries affecting Canadian origin salmon populations in the U.S. is regulated by the Pacific Salmon Treaty. The harvest limits applied to regulate U.S. fisheries under the Treaty were developed by the fisheries resource co-managers and NMFS to allow for the rebuilding of U.S. Chinook salmon stocks affected by the fisheries. The NMFS ESA 4(d) Rule limit 6 evaluation and determination for Puget Sound fishery effects on listed Puget Sound Chinook salmon can be found at: http://seahorse.nmfs.noaa.gov/pls/pcts-pub/sxn7.biop_results_detail?reg_inclause_in=('NWR')&idin=14760.

Comment 17: One commenter questioned NMFS approval of the Shared Strategy Plan's hatchery component, which relies on Puget Sound area HGMPs, because some HGMPs are still under review.

Response: NMFS has received HGMPs for all salmon hatcheries in Puget Sound and currently is in the process of reviewing those plans and preparing the appropriate documents for our NEPA and ESA determinations on the HGMPs. The public will have opportunity to comment on NMFS determinations through the NEPA and ESA processes. NMFS believes the Recovery Plan's reliance on the HGMPs is appropriate and that when

the NEPA and ESA determinations are complete, the HGMPS will be implemented in a manner that supports achievement of the Recovery Plan's goals.

HARVEST

Comment 18: Several commenters raised concerns regarding the harvest standards outlined in the Shared Strategy Plan. Concerns included whether there was a disconnect between recovery of the ESU and proposed harvest levels. One commenter questioned the appropriateness of using the Harvest Resource Management Plan (RMP) as the harvest element of the Shared Strategy Plan.

Response: The goal of the Shared Strategy Plan is "to recover self-sustaining, harvestable salmon runs in a manner that contributes to the overall health of Puget Sound and its watersheds and allows us to enjoy and use this precious resource in concert with our region's economic vitality and prosperity." (Shared Strategy, Volume 1, 2005). Most of the individual watershed plans include harvest provisions from the Harvest RMP approved by NMFS for the Puget Sound region. The goal of the Harvest RMP is to "ensure that fishery-related mortality will not impede rebuilding of natural Puget Sound Chinook salmon populations to levels that will sustain fisheries, enable ecological functions, and are consistent with treaty-reserved fishing rights."

The Harvest RMP's goals are based on current habitat conditions, while the recovery plan's goals count on significantly improved habitat conditions in the future and on an integrated approach to managing the three Hs (habitat, harvest and hatcheries). On the way to recovery, the harvest management strategy is structured to allow more fish onto the spawning grounds as habitat conditions improve, based on the best available information on habitat productivity and capacity. In the Supplement, NMFS states that it will "continue to work with the co-managers on further defining and assessing quantifiable effects of harvest on survival and recovery."

Adaptive management programs are built into both the Harvest RMP and the recovery plan. Harvest co-managers have contributed to the Shared Strategy Plan and will use adaptive management to refine harvest objectives, as part of a more integrated approach to all-H management. Managers will re-evaluate harvest objectives when needed and at regular five-year intervals to readjust escapement thresholds in response to changing habitat conditions. As habitat productivity and capacity improve and hatchery reform measures take effect, the thresholds will be revised upward, eventually converging with recovery planning targets.

Furthermore, consultation is required on all Federal actions that may affect listed species under the ESA. In 2005, NMFS made a determination that the harvest RMP met the "take" exemption criteria of the 4(d) Rule, a Federal action requiring consultation under section 7 of the ESA. Under Limit 6 of the ESA 4(d) Rule, a harvest plan must meet a series of criteria in order to qualify for the take exemption; many of these criteria are also components of recovery plans (i.e., consideration of achievement of VSP criteria, effective enforcement, monitoring and reporting programs, and adaptive management).

The NMFS determination was based on a comparison of the effects on survival and recovery of the listed Puget Sound Chinook ESU with and without the proposed fisheries. That is, does the action itself appreciably change the trajectory of the ESU from what it would be if the action did not occur? This review examined the effect of the RMP alone on survival and recovery of the Puget Sound Chinook ESU under current conditions, i.e., assuming no improvement in the habitat and hatchery sectors, and no changes in fishery regimes that affect Puget Sound Chinook but are outside those proposed in the RMP for Puget Sound. In addition, as part of its evaluation, it considered the relevant PSTRT biological viability criteria. NMFS concluded that the RMP both met the criteria of the 4(d) Rule and was consistent with the biological viability criteria for the ESU. NMFS found that:

- Escapements for all the populations were stable or increasing.
- In general, further harvest restrictions would have little effect on abundance trends at this time.
- The RMP's management objectives, in combination with other ongoing habitat and hatchery efforts, would provide adequate protection for each of the five regions of the Puget Sound Chinook ESU, taking into account the geographic distribution, life history traits, and genetic diversity of the populations in each of the regions.
- The RMP included effective enforcement, education, monitoring, evaluation and adaptive management programs.
- The RMP was consistent with Federal court proceeding with continuing jurisdiction over tribal harvest allocations.

Therefore, NMFS determined that the RMP met the criteria of the 4(d) Rule, was protective of the Puget Sound Chinook ESU, and was consistent with treaty trust responsibilities.

In reaching its conclusion, NMFS considered a range of indicators for each population in the Puget Sound Chinook ESU: population status and trends in natural-origin and total natural escapement, habitat condition, the role of hatchery programs, recovery criteria recommendations of the PSTRT, the effect of the proposed fisheries on rebuilding for the next 25 years, the effect of past harvest reductions on abundance trends and productivity, the practical effect of further harvest reductions, and the adaptive management actions in the RMP that would respond to changes in the resource.

One of the areas of confusion about harvest goals has to do with the use of thresholds in the Harvest RMP and how they appear to differ from the recovery planning targets identified in the Shared Strategy Plan. The Harvest RMP uses spawner numbers--Low Abundance and Upper Management Thresholds--as an indication of the current status of a population and rebuilding step, not as a recovery goal:

- The Low Abundance Threshold is a buffered management guideline intended to avoid allowing the number of spawners to fall to such a low level that there would be a significant risk of biological instability. From pre-season forecasts of stock abundance, co-managers estimate the potential spawner level after fishing. If the

potential spawner level is expected to fall below the Low Abundance Threshold, then more restrictive fishing plans are adopted for that season.

- The Upper Management Threshold is the level of spawners needed to maximize the productivity of naturally spawning fish, given current habitat capacity. Over time, under the Harvest RMP, the numbers of spawners will exceed the Upper Management Thresholds 80% of the time, thus working together with improving habitat and hatchery practices to rebuild Puget Sound Chinook populations.

The assumptions used to establish the Upper Management Threshold are based on worst-case scenarios such as poor ocean conditions and continued degraded habitat conditions, to hedge against the uncertainties inherent in modeling and in natural variability of Chinook survival levels. Since survival is difficult to predict accurately, forecasts of abundance are generally based on conservatively low survival rates.

The Harvest RMP is re-evaluated at regular five-year intervals to readjust escapement thresholds in response to changing habitat conditions. As habitat productivity and capacity improve and hatchery reform measures take effect, the thresholds will be revised upward, eventually converging with recovery planning targets.

Comment 19: One commenter questioned whether the Shared Strategy Plan's harvest proposals accounted for spatial and diversity effects on the ESU.

Response: The NMFS evaluation of the Harvest RMP included an assessment of the effects of harvest on diversity and spatial structure of the ESU. The assessment can be found in the NMFS Evaluation of and Recommended Determination on a Resource Management Plan (RMP), Pursuant to the Salmon and Steelhead 4(d) Rule and sections 3.3.7 and 4.3.7 of the Final Environmental Impact Statement for the Puget Sound Chinook Harvest Resource Management Plan. Both are available on our website: http://www.nwr.noaa.gov/Salmon-Harvest-Hatcheries/State-Tribal-Management/PS-Chinook-RMPs.cfm. The Supplement to the Shared Strategy Plan identifies the need for each H-sector to more thoroughly evaluate the effects of their actions on spatial structure and diversity .

Comment 20: One commenter asked how the Recovery Plan would take into account the recent announcement by the Administration to reduce the harvest of listed fish.

Response: The harvest management actions described within the Puget Sound Chinook Salmon Recovery Plan are consistent with the Administration's announcement. Harvest management is specifically designed to work together with the habitat and hatchery actions to rebuild and eventually recover Puget Sound Chinook. In addition, in 2005, NMFS evaluated the Puget Sound Chinook Harvest RMP, on which the harvest elements of the Recovery Plan are based, against criteria in the 4(d) Rule for Puget Sound Chinook. The 4(d) Rule specifies criteria for categories of activities such as fishing that ensure they are conducted in a way that contributes to the conservation of or adequately limits impacts on listed salmonids. NMFS concluded that the Harvest RMP meets the 4(d) criteria.

Comment 21: One commenter proposed that NMFS may be violating the ESA's recovery planning standards, as the RMP fails to protect all of the regions needed for recovery of the ESU.

Response: The NMFS evaluation of the RMP was discussed in Comment 1 above. As part of our determination on the RMP, we concluded that the RMP's management objectives, in combination with other ongoing habitat and hatchery efforts, would provide adequate protection for each of the five regions of the Puget Sound Chinook ESU, taking into account the geographic distribution, life history traits, and genetic diversity of the populations in each of the regions.

As the PSTRT has acknowledged, there are various recovery scenarios that may lead to a recovered ESU. The final ESU-wide scenario for delisting will likely include populations with a range of risk levels, but when considered in the aggregate, the collective risk will be sufficiently low to assure persistence of the ESU. When making its assessment of the Shared Strategy Plan, NMFS considered the combined effects of the habitat, hatchery and harvest elements in meeting the recovery plan criteria. In its Supplement, NMFS identifies augmentations to the Shared Strategy Plan, including those for harvest, that would increase the certainty that the Recovery Plan would lead to the recovery of the Puget Sound Chinook ESU. Among others, these augmentations include seeking reductions in Canadian fisheries impacts on some Puget Sound Chinook salmon populations and further development of spatial structure and diversity criteria. Completion of this work will further increase the certainty that harvest will not impede rebuilding of the ESU.

Comment 22: Several commenters were concerned with the impact of Tribal netting on the ESU. Other concerns included whether the incidental take from harvest had been quantified, whether harvest levels would diminish the effects of long-term habitat restoration efforts, the need to increase harvest accountability, promoting the use of selective fishing techniques, and whether over-harvesting should have been identified as a limiting factor.

Response: Almost all the listed Puget Sound Chinook that are caught are taken in harvests that are directed at healthy hatchery Chinook stocks and other salmon species. This incidental mortality, including estimates of non-landed mortality, is accounted for in fishery planning and in post-fishing-season assessments of fishery performance. Fisheries are managed such that the total harvest, including incidental harvest, does not exceed harvest objectives designed to rebuild the listed populations.

Several of the commenters raised concerns about sufficient enforcement and harvest accountability. The Washington Department of Fish and Wildlife (WDFW) and individual treaty tribes are responsible for regulation of harvest in fisheries under their authority, consistent with the principles and procedures set forth in the Puget Sound Salmon Management Plan, the plan implementing the U.S. *v* Washington decision for Puget Sound salmon. Non-tribal commercial and recreational fishery regulations are enforced by WDFW. WDFW enforcement officers ensure compliance with licensing and

habitat requirements and enforce prohibitions against the illegal taking or poaching of fish and wildlife (WDFW 2003). On average, officers currently make more than 300,000 public contacts annually. Each tribe exercises authority over enforcement of tribal commercial fishing regulations, whether fisheries occur on or off their reservation. In some cases enforcement is coordinated among several tribes by a single agency. Enforcement officers of one tribal agency may be cross-deputized by another tribal agency, where those tribes fish in common areas. Prosecution of violations of tribal regulations occurs through tribal courts and governmental structures. Tribal and WDFW enforcement branches work cooperatively and with Federal agencies, including NMFS/NOAA enforcement branch, to enforce fishing regulations and prosecute offenders. Tribal and WDFW fishery managers monitor each other's fisheries closely and are in close contact with both the fishermen and the public. Each year, the co-managers prepare a report evaluating the previous year's fishery performance which is provided to NMFS and made available to the public.

The harvest objectives in the Recovery Plan do not distinguish between fish caught in saltwater or freshwater, by nets or by sport gear, for personal consumption or for commercial sale, as a result of landing or release. There is no biological reason to distinguish among these impacts. The question of where the impacts take place, and by what gear, is more often a question of allocation and increased opportunity than conservation. It is the harvest management objectives that limit the impacts on the populations and the effect of fisheries on salmon recovery.

Purse seines, reef nets, beach seines and angling gear can be used in a highly selective manner so that non-targeted fish or species can be released with low incidental mortality. There are a number of selectivity measures being implemented for the current gears employed by the co-managers; for example:

- Recovery boxes: Commercial purse seines, gillnets, and reef nets use recovery boxes when release of certain fish is required; i.e., non-tribal purse seine and gillnet fisheries in Marine Catch Areas 7 and 7A during the time Chinook and coho salmon are present. Recovery boxes allow fish to recover from handling prior to being released. Studies show released fish survive better when recovery boxes are used.
- Reef net selective release: Reef net gear maintains a targeted fishery on abundant sockeye and coho salmon in Area 7, because survival from that gear of fish required to be released is very high.
- Cut meshes: Gillnetters are required to cut net meshes in order to release non-target species. Fish released from a gill net under typical methods do not exhibit high survival. Cutting meshes to release the fish significantly reduces trauma to the animal, and improves survival.
- Special Recreational Handling Rule: In Marine Catch Areas 1 through 6 and 13, and in two Puget Sound freshwater fisheries, it is illegal to bring a wild salmon, or a species of salmon, aboard a vessel (or otherwise "land") if it is unlawful to retain those salmon. Keeping fish in the water before release reduces trauma to released fish, thus increasing post-release survival.

Over-harvest in previous years was identified as one of the limiting factors in the initial listing of the Puget Sound Chinook salmon ESU. Volume I, Chapter 3, of the Shared Strategy Plan reviews the history and effects of harvest on Puget Sound Chinook salmon. The Plan includes specific recovery strategies and measures for harvest that will guide actions at the watershed and regional scales to ensure the harvest management strategy does not impede the recovery of the ESU. To determine that the affected ESU is recovered to the point it can be de-listed, the listing factors should be addressed according to specific criteria identified for each so that de-listing is not likely to result in re-emergence of the threat. Section 2.3.1.2 of the Supplement to the Shared Strategy Plan lists the specific criteria for each of the listing factors, including overutilization for commercial, recreational, or educational purposes.

See also responses to comments 18 and 19, above.

ADAPTIVE MANAGEMENT

Comment 23: Several commenters expressed the need for NMFS to develop an adaptive management plan based on best available science. In addition, the need for data collection and evaluation was identified.

Response: NMFS continues to develop guidance for applying adaptive management to recovery plan implementation, and will make this available as soon as it is ready. The NMFS framework for adaptive management is based on a decision structure that identifies the questions that need to be asked to structure a recovery plan's monitoring and evaluation program. The decision structure builds upon (a) the ESU and population viability principles described in McElhany et al.(2000) and associated indicators proposed by the TRTs, and (b) the identified threats limiting populations and ESU viability as defined by the five statutory listing factors in section 4(a)(1) of the ESA. NMFS has provided its framework to the Shared Strategy Adaptive Management workgroup and will continue to provide technical and staff support to integrate the framework into the management structure ultimately implemented for Puget Sound.

Shared Strategy provided NMFS a report on its progress in developing a regional adaptive management plan. This report is included as an appendix to the final Supplement.

The adaptive management and monitoring plan under development will integrate watershed, regional, and state scales. Most of the metrics called for in the plan will be reported by the watersheds and summarized at a regional scale. There will also be a decision-making link between the watershed groups and a regional decision-making body.

Regional groups such as the Shared Strategy for Puget Sound will have an important role in shaping the data collected for statewide monitoring reports. These statewide reports serve several needs, including development of an annual State of the Salmon Report, reporting recovery progress to support allocation decisions for the Pacific Coastal Salmon

Recovery Fund, and also supporting a delisting decision by providing ESU-wide data on biological fish data and habitat status and trends data.

Comment 24: One commenter supported refining actions based on watershed assessments that identify the causes of habitat and water quality degradation.

Response: NMFS agrees that as Recovery Plan implementation proceeds, refinements in watershed assessments and modeling should more accurately identify causes of habitat and water quality degradation. NMFS expects that improvements in data collection and management, monitoring, and modeling will influence prioritization of actions at the watershed level. Refinements to the watershed assessments should be reflected in the monitoring and adaptive management program as it is carried out.

ALL-H INTEGRATION

Comment 25: Commenters felt it was unclear how hatchery and harvest management would be integrated and coordinated with habitat protection and restoration. Several questioned how the harvest and hatchery standards in the Recovery Plan contributed to recovery.

Response: In their review of the Shared Strategy Plan, the PSTRT members identified the need to more fully integrate the "Hs," including hatchery actions, and NMFS also stated this in its Supplement. NMFS noted in the Supplement that the Puget Sound watersheds are currently working to develop more integrated approaches for hatchery actions and habitat protection and restoration. NMFS also identified additional harvest-related actions in its Supplement to increase the certainty of recovery. Most of the watershed plans include harvest provisions drawn from the Harvest RMP, which is consistent with recovery (see response to Comments 18-22, above). The hatchery programs included in the Shared Strategy Plan were incorporated at the watershed plan level by the co-managers involved in crafting the individual WRIA plans. The harvest, conservation, and/or research actions included in the hatchery plans were therefore considered in the development of harvest and habitat management measures.

In its Supplement, NMFS noted that the Puget Sound watersheds were in varying stages of developing their integrated approaches and stated its expectation that the various managers would continue working to complete integrated approaches for each watershed. This work is actively underway, with completion of integrated plans for all watersheds scheduled for December of 2007. The harvest objectives specified in the plan incorporate available information on freshwater and marine habitat conditions. As habitat protection and restoration actions take effect, habitat conditions should improve. As part of the adaptive management program for harvest, harvest managers, working with NMFS, will review the harvest objectives every five years and revise as necessary, incorporating new information regarding habitat conditions that result from the monitoring and evaluation programs specified in the Recovery Plan.

WATERSHED PLANS

General Comment

Comment 26: Some comments express a desire for NMFS to support the organizational differences in the individual chapters and make it clear that each watershed chapter is unique.

Response: NMFS applauds the work of the Shared Strategy and the watershed organizations that developed the Recovery Plan. NMFS recognizes the diversity of those groups and notes that planning approaches, staff and funding levels, and other factors influenced the format of the local chapters. NMFS understands the local chapters will be updated over time as they are implemented and adaptive management proceeds. In its final Supplement, NMFS identifies several watershed-specific concerns, but does not directly alter the watershed chapters. Rather, NMFS identifies improvements to the plans that we expect will occur during plan implementation.

Lake Washington (Cedar/Sammamish)

Comment 27: Comments identified the following issues with this watershed plan: (1) disagreement that the Cedar River sockeye supplementation program is a threat to Chinook in the basin; (2) disagreement that Chinook hatchery strays pose a genetic risk to natural-origin spawners in the basin; (3) the belief that naturally spawning Chinook in the watershed are a single genetic stock; (4) the need to prioritize fish passage and survival in the Ship Canal, the Sammamish River, and the COE Chittenden Locks; and (5) the need for large woody debris restoration and Japanese knotweed removal.

Response: (1) NMFS agrees that the Shared Strategy Plan's characterization of the potential impacts of the Cedar River sockeye supplementation program is not universally supported. The City of Seattle has prepared a comprehensive adaptive management plan for the Cedar sockeye hatchery. NMFS expects that as this plan is implemented, the potential risks to Chinook from the sockeye supplementation program will be addressed. (2) There is strong evidence that rather than being a negative risk factor in this altered ecosystem setting, hatchery strays are instead supporting the populations, and without them, Chinook salmon runs in the basin would be at a much greater risk of extinction. (3) The PSTRT and NMFS are aware of the findings of the most recent genetic study that found no evidence to refute the hypothesis that naturally spawning Chinook in WRIA 8 are a single genetic stock. Nevertheless, the PSTRT believes it is sensible to maintain two separate Chinook populations in the Lake WA basin at this time. NMFS recognizes the immediate need for additional genetic and other studies to determine more definitively the composition of salmon in the Cedar-Lake Washington system. Results of those studies will be analyzed by the PSTRT, NMFS, WDFW and the tribes as appropriate. (4) NMFS is aware of longstanding problems of fish passage at the locks for both adult and juvenile salmon. We are consulting with the U.S. Army Corps of Engineers, who operate the locks, to improve fish passage and monitor the results. We will continue to work with the Corps and coordinate with the Muckleshoot Tribe to continue to improve passage and

survival. (5) In the Lake Washington basin, NMFS agrees with the recommendation to develop a proposal to study large wood placement in the Cedar River. This could provide assurance that progress will be made to restore habitat complexity to significantly improve capacity and productivity. Additionally, NMFS agrees that Japanese knotweed infestation may be a major problem limiting riparian function in the Cedar River, and the Recovery Plan, therefore, should include increased efforts to survey and eradicate knotweed.

East Kitsap

Comment 28: One commenter was concerned that this watershed chapter was prepared without adequate public participation.

Response: Duly noted. NMFS encourages the watershed planning groups to invite public participation in plan implementation, adaptive management and monitoring. NMFS believes the likelihood the Recovery Plan's goals will be achieved is substantially increased if it is broadly supported by the people in the watersheds across Puget Sound.

Comment 29: One commenter felt that actions for this watershed should be based on the Regional Nearshore Approach until a Salmon Recovery Funding Board funded assessment for the watershed was completed.

Response: NMFS agrees that, since there are no natal Chinook streams for any of the 22 identified Puget Sound Chinook populations in the East Kitsap planning area, the nearshore is an important and critical component of East Kitsap's contribution to ESU-wide recovery. NMFS agrees with the comment that conditions in the Kitsap watershed will benefit from applying findings and recommendations contained in the nearshore chapter of the Recovery Plan as it is written and as it evolves, and that it will be important to incorporate the results of the nearshore assessment that is now underway into the recovery plan work program in future updates to the East Kitsap plan.

Green/Duwamish

Comment 30 Comments identified the following issues with this watershed plan: the habitat area to be restored appears to be only a small fraction of the historical nearshore habitat; the need to restore large woody debris and address the use of the Middle Green River parklands and open spaces; the need to address potential future development; the belief that the goal of a naturally self-sustaining population in this watershed may be unrealistic; and the need to address dams in the Puget Sound area.

Response: NMFS agrees that it may not be possible to achieve a long-term goal of naturally self-sustaining harvestable levels, given the severely altered state of the Green-Duwamish ecosystem and the threat of degradation from future development impacts. However, several significant initiatives in the watershed provide a solid foundation for habitat protection and restoration. Land management in the upper watershed is already covered by the HCP with the Tacoma Public Utilities; thus, habitat conditions are

expected to continue to be protected and gradually improve. Instream flows are also provided by the HCP to the Lower Green River. Sustaining the Green River Chinook may require a production hatchery indefinitely. And, given the projected growth in housing, roads, and related infrastructure, the Recovery Plan would be strengthened if it better described the threat of salmon habitat degradation from future development and human population growth.

Regarding the potential to increase spatial structure by improving fish passage into the upper Green River, NMFS agrees that recent studies have shown a relatively low survival in juvenile salmon passed over Howard Hansen Dam. Therefore, passing Chinook salmon into the upper watershed may not necessarily result in an overall basin-wide increase in productivity for Chinook.

NMFS also agrees that the Middle Green River provides an opportunity for large-scale wood additions, given its broad unconfined reaches, amount of publicly owned riparian lands, and infrequent bridge spans. NMFS supports placing large wood in that section of the Green River. In addition, NMFS agrees that protecting and improving tributary habitat is important to maintain spatial distribution of the Chinook population.

NMFS agrees that proposed plan actions aimed at restoring estuarine and riverine habitat are important to expand the habitat capacity and productivity of natural origin Chinook in the basin. Despite the very high cost of restoration projects and large extent of completely developed land along the river and nearshore, it may be possible to restore some of the functional habitat in these areas over time.

Nooksack

Comment 31: One commenter questioned why Nooksack early Chinook were included in the Puget Sound Chinook ESU.

Response: Both populations of Spring Chinook residing in the Nooksack watershed were determined to be within the Puget Sound ESU after extensive analysis of population structure, abundance, geographic locale, and genetic data. This analysis is documented within the NOAA Technical Memorandum released in February 1998 (NMFS-NWFSC-35).

Comment 32: One commenter advocated adding a strategy to reconnect access, through blockage removal, to habitat that is functioning or that could be restored; the commenter also thought the plan should address predicted population growth.

Response: NMFS agrees that reconnecting habitat within the Nooksack Basin should be a priority recovery action, and notes that it is also prioritized within the Nooksack Recovery Plan. Reconnecting isolated spawning habitat within the Middle Fork and Canyon Creek are part of the 10-year action plan (Appendix B) and would enhance basin-wide spatial structure. In addition, reconnecting isolated floodplain and estuary habitat

would enhance rearing opportunities essential for juveniles from each population in the Nooksack.

It is recognized that human population growth within the Nooksack will challenge local governments to adequately protect existing habitat functions and not foreclose restoration options into the future. The Nooksack Plan identifies the need to integrate local government permitting and planning processes. Action #4 of the 10-year action plan identifies the need to integrate salmonid habitat protection into the county Critical Areas Ordinance, and the Shoreline Management Program. These two programs directly address future population growth within Whatcom County.

Puyallup/White

Comment 33: One commenter identified the following issues with this watershed plan: the need to prioritize the protection of natural stream flows in the White River bypass reach and add the West Fork of the White River and its tributaries to the list of tributaries that should be protected; the need to update the Buckley Fish Trap at Mud Mountain Dam and test the fish screens in the diversion canal.

Response: NMFS concurs that recovery of White River spring Chinook depends on the protection and restoration of these habitats, especially the improvement of estuarine habitat and mainstem spawning areas. We agree that the Buckley Fish Trap needs to be improved and the fish screens on the diversion canal need to be tested.

San Juan Islands

Comment 34: One commenter acknowledged the necessity of completing assessments, but stressed that such assessments need to result in on-the-ground projects.

Response: Duly noted.

Skagit

Comment 35: Several commenters expressed the need to involve a broader array of stakeholders in plan development. Some comments reflected a belief that the plan was developed in a vacuum and without adequate community participation. Several commenters cited concerns that the plan was biased against forest landowners and the agricultural community.

Response: NMFS supports the idea of a collaborative stakeholder process. We need to move forward to implement actions based on the best available information, and we are open to adjusting the Plan if new, technically sound information is presented. In the meantime, many concerns can be addressed through site-specific implementation, and we strongly encourage affected stakeholders to participate in specific project development. An example of a recent, successful collaboration among Tribal, agricultural, and fisheries interests is the development of drainage maintenance agreements that streamline the

regulatory permitting process and enhance fish habitat. NMFS will support similar collaborative efforts as other issues arise. NMFS recognizes the important role that the agricultural and forest landowner communities play in salmon recovery and supports an implementation framework that includes their active participation.

Comment 36: Some comments stressed that recovery projects would have to be advanced through mechanisms (including incentives) that increase landowner and community support.

Response: NMFS supports mechanisms that increase landowner and community involvement, as well as further work in the Skagit watershed to create and implement incentive-based habitat programs. Although the Skagit chapter does not include significant proposals for incentive-based habitat protection, Volume I, Chapter 6 does. NMFS accepted the Shared Strategy Plan Volumes I and II as a package that, if implemented, would have a high likelihood of achieving recovery. NMFS supports appropriate combinations of voluntary and regulatory programs to maximize recovery opportunities.

Comment 37: Some comments reflected a belief that the watershed plan was not based on best available science. One commenter questioned the statement that most subbasins in the Skagit watershed are "fully seeded" with Chinook. One commenter said flows from regulated streams should not be used to predict flows in unregulated streams.

Response: NMFS crafted Section 3.3 of the Final Supplement to allow for alternative or new science to be considered as appropriate and available. If commenters want NMFS to consider alternative approaches for achieving recovery, we can do so as long as the strategy can be analyzed for probability of achieving recovery.

Existing models available for the Skagit watershed indicate that juvenile survival and capacity are limiting recovery of the populations of Chinook in the Skagit River Basin. The PSTRT considers statements in recovery plans about status (e.g., a statement whether spawning capacity is limiting) as hypotheses that can be tested throughout implementation of the Recovery Plan. If commenters are uncertain about whether improvements to spawner capacity will increase the chances that early-run Chinook populations recover, they can include such tests during implementation of the Recovery Plan.

NMFS agrees that flows from regulated streams should not be used to predict flows in unregulated streams because of differences in watershed runoff characteristics and the effects of flow regulation by dams.

Comment 38: Some comments expressed concern that recovery goals for some Skagit populations were too low. One commenter felt that the escapement goal for the Suiattle Springs population was low. Another commenter felt that the recovery goals for the three spring Chinook populations were too low and the goals did not give enough attention to genetic diversity.

Response: The PSTRT used a variety of information and models to establish recovery planning targets for each of the Puget Sound Chinook populations. The PSTRT described the information and the decision rules it used to produce the planning ranges for viability in the document, *Planning Ranges and Preliminary Guidelines for the Delisting and Recovery of the Puget Sound Chinook Salmon Evolutionarily Significant Unit* (PSTRT 2002). The information included consideration of diversity, although the documentation indicates the information was constrained. The decision rules for establishing recovery planning targets included consideration of the strengths and weaknesses of the various models and accounting for uncertainty such that the planning range was likely to encompass the actual viability value.

The harvest regime for Skagit Spring Chinook populations is designed to manage for the weakest of the three spring populations. The populations are managed using an exploitation rate approach, i.e., a constant proportion of the available fish is harvested, which takes into account uncertainty. Under the current rates, more Chinook are expected to escape than would be needed to fully seed the habitat, based on the available data. As better information becomes available and habitat improves, harvest objectives for the Skagit Spring Chinook populations will be revised to incorporate the new information.

Comment 39: Some comments reflected a concern that infrastructure revisions in the watershed could negatively impact agriculture.

Response: NMFS is aware of the concerns regarding infrastructure revisions and possible negative effects on agriculture, and the differences between stakeholders in their view on the importance of regulatory vs. voluntary mechanisms to restore habitat. The recovery plan has identified the area of habitat that may be needed to achieve recovery of Skagit River populations. However, NMFS is committed to working with the agricultural community to maintain agricultural viability and restore fish populations. Restoration projects are currently being proposed on public lands.

Comment 40: Some commenters stated that permit exempt water withdrawals were not a significant issue in the watershed.

Response: NMFS is aware that there are mixed views on the importance of exempt water withdrawals in the watershed.

Comment 41: One commenter reflected that the Forests and Fish Law was not given enough attention in the plan. Another noted that language in both Vols. I and II of the Shared Strategy Plan is inconsistent with NMFS public statements regarding the law.

Response: The separate and somewhat parallel developments of the Shared Strategy Plan and Forest Practice Rule-HCP (FPHCP), by different entities using different processes of public review, resulted in the appearance of incomplete description of the FPHCP in various sections of the Plan. The Plan lacked some details of the FPHCP because that HCP was being developed in parallel with watershed chapters of the Plan, and NMFS has

a separate process to disclose possible environmental effects of an HCP outside the Plan's process for public review. The complete NEPA record and NMFS analyses (ESA Section 7(a)(2) and 10(a)(2)(B) Findings) were completed in May and June 2006 at the time the decision was made by NMFS to issue the Incidental Take Permit for the FPHCP.

Comment 42: Some comments noted that the plan lacked implementation specifics and that stakeholders will need to work together to develop an implementation plan.

Response: As the first step in a 10-year plan implementation, watersheds prepared a 3-year implementation plan. These plans were reviewed by the Shared Strategy workgroup and the PSTRT. Shared Strategy is developing implementation and all-H integration strategies with the watershed. Then an adaptive management approach and structure will be completed by December 2006 and adopted by Shared Strategy and the watersheds.

Comment 43: Commenters indicate that the co-managers have not yet completed the contingency conservation plan for the Skagit River referenced in the Artificial Production section of the Shared Strategy Plan (Chapter 5, page 186), but are working on its completion.

Response: NMFS understands that the co-managers are collaborating on the completion of the referenced conservation plan, and NMFS will provide technical support as needed to assist in its completion.

Stillaguamish

Comment 44: One commenter questioned how the 10-year population goal for the Stillaguamish population could be met when roughly 30 percent of the funding is going toward riparian plantings. This commenter also expressed concern that habitat protection actions are vague, and that the adaptive management section does not contain compliance or effectiveness monitoring.

Response: NMFS believes the commenter is appropriately concerned about directly linking project funding and implementation to making immediate progress toward the population recovery goals. NMFS recognizes that particularly in the near term, sufficient resources will not be available to fund all the salmon recovery actions necessary in each watershed. It is critical, therefore, that project selection, project sequencing, and funding for implementation be coordinated around the actions that will result in the greatest benefit for salmon and will move the population toward recovery. The PSTRT reviewed all the watershed and nearshore plans in the spring of 2005, including the Stillaguamish. The reviews evaluated the certainty that the proposed actions in the plans, if implemented, would result in the estimated outcomes for salmon. PSTRT notes from those reviews are available at
http://www.nwfsc.noaa.gov/trt/puget/trt_reviews_2005_final.pdf
http://www.nwfsc.noaa.gov/trt/puget/trt_reviews_2005_final.pdf
Watershed groups and the Shared Strategy currently are using the notes to guide implementation actions toward measures that will increase the certainty of the estimated

outcomes for salmon, and ultimately put the populations across the ESU on a trajectory toward recovery.

In May 2006, the Puget Sound Salmon Recovery Council, the PSTRT, and NMFS reviewed proposed three-year implementation plans from all Puget Sound watersheds through the Shared Strategy process. The purpose of the review was to help watershed groups identify projects that (1) reduced the uncertainties identified by the PSTRT in 2005, (2) could be implemented within the three-year time frame, and (3) would move the population toward its recovery goal. NMFS believes the review process improved the three-year implementation proposals and the likelihood that proposed actions will benefit salmon in Puget Sound. Notwithstanding those improvements, however, NMFS believes a coordinated monitoring, evaluation, and adaptive management system is needed to guide Recovery Plan implementation. NMFS expects adjustments to existing 10-year implementation action lists will be made over time as the Recovery Plan is implemented and adaptive management proceeds.

Also see comment #23 regarding adaptive management.
Also see comment #53, 57, and 58 regarding funding.

Comment 45: One commenter was concerned that the plan showed an apparent bias toward highly engineered habitat restoration projects; the commenter believes the plan is too focused on maintaining static conditions instead of allowing for the dynamic expression of natural processes.

Response: The plan does include engineered restoration projects. However, it also contains many process-based goals which include decommissioning forest roads, increasing cover of hydrologically mature forest, riparian planting, and removing bank armor. Both engineered and process-based projects are intended to achieve habitat objectives and are reasonably likely to succeed.

Skokomish

Comment 46: One commenter questioned how the Recovery Plan could be considered adequate to meet ESA recovery plan requirements when one of the watersheds -- Skokomish – has no recovery plan.

Response: In the Hood Canal biogeographical region, the PSTRT identified two Chinook salmon populations—the Mid-Hood Canal and Skokomish. In order to meet the ESU viability criteria established by the PSTRT, both of these populations need to achieve a low risk status over time. It was not possible to produce a watershed plan for the Skokomish Chinook salmon population in time for inclusion in the Shared Strategy Plan because of ongoing litigation over Cushman Dam in the Skokomish River basin. Accordingly, NMFS advocated a precautionary approach in watershed planning to preserve future options for recovering the Skokomish population. NMFS and the PSTRT reviewed the Mid-Hood Canal watershed plan (summarized in the Shared Strategy Plan,

Volume I, Chapter 5, pp. 302-315) and proposed measures to ensure that future recovery options for both Hood Canal Chinook salmon populations would be preserved.

Recent court decisions have created a new opportunity for recovery planners in the Skokomish to identify site-specific actions in the watershed that will support salmon recovery. NMFS understands that state and Tribal co-managers, with support and involvement from the U.S. Fish and Wildlife Service and Olympic National Park, are currently in the process of writing a local plan for the Skokomish River basin. The local plan authors anticipate additional collaboration with members of the Hood Canal Coordinating Council as plan development proceeds. The plan will cover all aspects of salmon recovery in the Skokomish watershed and other relevant areas. They intend to complete that plan in 2007. NMFS will review that plan when it becomes available and work with the co-managers and local jurisdictions to ensure that habitat, harvest, and hatchery actions applied to recover the Skokomish population are integrated.

PLAN IMPLEMENTATION

Comment 47: Several commenters are concerned that the Recovery Plan does not contain explicit commitments from jurisdictions with implementation authority. Various concerns include that the Recovery Plan relies too much on voluntary actions, that there is a lack of benchmarks to ensure actions are being implemented, and that a regulatory framework that supports recovery does not exist. A major concern is that without explicit commitments, it is questionable whether the actions identified in the Recovery Plan will be implemented; if they are not, then recovery of the ESU is less likely to occur.

Response: The ESA does not require that commitments to take specific actions be part of recovery plans. The primary purposes of recovery plans are to determine delisting criteria and to identify actions needed for recovery and the cost of those actions. Voluntary actions are acceptable components of recovery plans. That said, throughout the recovery planning process, NMFS encouraged the Shared Strategy for Puget Sound to obtain concrete commitments for action wherever possible in order to increase the certainty of plan implementation and realized benefits for listed salmon. Both the regional and watershed chapters contain proposals for enhancements of regulatory programs to protect shoreline, riparian, freshwater, wetland and upland habitat. NMFS supports such enhancements and expects state and local authorities to carry them out in a timely manner.

In the intervening months of review and public comment on the draft Recovery Plan, the Shared Strategy and many state and local organizations have continued working diligently to obtain both commitment and funding for implementation of salmon recovery actions at both a regional and local scale. Shared Strategy has provided a summary of commitments by Puget Sound local government and other authorities to habitat protection and restoration and the implementation of watershed recovery plans. These commitments have been made by letters to William Ruckelshaus and/or formal resolutions confirming commitment of funds and staff to specific actions, given funding ability**.** Budget enhancement requests and updates sent under separate cover demonstrate

that WDFW and WDOE, the two principal agencies who committed significant resources to recovery in letters to NMFS Northwest Regional Administrator Robert Lohn, are being met.

Shared Strategy also provided an update of budget requests for projects and programs directly related to salmon recovery. These programs and projects are identified as commitments in Volume I of the Shared Strategy Plan, in the implementation schedule, Chapter 9, and in Regional Salmon Recovery Strategies, Chapter 6. The principal source for budget information is a report provided by the Washington Department of Ecology to the Puget Sound Salmon Recovery Council[1] in September 2006, entitled "Puget Sound Budget Enhancements Proposed for the 2007-2009 Biennium." Some commitments made by state agencies, e.g. Ecology's work on NPDES permits, are part of their ongoing operations and not reflected in the budget enhancement requests submitted for the next biennium.

The entire text of these updates from Shared Strategy is included as an appendix to NMFS final Supplement. The updates describe ongoing implementation of key strategies related to salmon habitat protection, integration of actions across the Hs, adaptive management, and procurement of commitments and funding to sustain implementation. NMFS is encouraged by the substantial progress being made by the Shared Strategy, tribes, watershed groups and others on implementation of multiple Recovery Plan elements. NMFS believes continued, active implementation of the Recovery Plan as well as completion and implementation of the adaptive management program is fundamental to achieving the Recovery Plan's goal of recovering the salmon in Puget Sound.

Comment 48: Several commenters expressed the need to update Shoreline Master Programs and Critical Area Ordinances to make them more supportive of salmon recovery. Commenters also expressed the need to address drainage maintenance issues, the inadequacy of current stormwater permits, and the need to review the Hydraulic Project Approval program administered by the Washington Department of Fish and Wildlife and the NPDES program administered by the Washington Department of Ecology.

Response: Chapter 6 of the Shared Strategy Plan describes freshwater, nearshore, and estuarine habitat protection strategies and actions that are necessary to implement in the next 10 years in order to support recovery of the Puget Sound Chinook ESU. NMFS concurs with the need to implement all the strategies and actions within the 10-year timeframe. NMFS believes the State Growth Management and Shoreline Management Acts provide important regulatory frameworks for ensuring that freshwater, nearshore, and marine habitat are managed in a manner that supports salmon recovery. Further, NMFS agrees that salmon habitat protection can and should be enhanced at the state and local level as local Critical Area Ordinances, Shoreline Master Programs, and development regulations are updated. NMFS expects state and local governments will use the best scientific information available as they amend their management programs and

[1] The Puget Sound Salmon Recovery Council is a policy leadership body with wide representation that provides guidance on implementation of the Plan

land use regulations to ensure salmon habitat is protected, consistent with the Recovery Plan's strategies and actions.

Comment 49: One commenter is concerned that the NMFS disclaimer in the Supplement undermines NMFS ability to implement the Recovery Plan.

Response: Duly noted. The disclaimer is required by national-level recovery planning policy (NMFS Interim Endangered and Threatened Species Recovery Planning Guidance, October 2004).

Comment 50: One commenter expressed concern that the Recovery Plan did not take critical habitat designations into consideration. The commenter believes explicitly acknowledging critical habitat would help inform of actions that may affect critical habitat.

Response: Critical habitats for Puget Sound Chinook were designated at watershed scales and apply only to Federal actions that may affect critical habitat. An analysis of specific effects of any particular action or set of actions will be done by NMFS at the time a particular action is proposed that involves Federal funds, lands, or permits. Salmon recovery planning at the watershed and project scale does not trigger a detailed analysis of effects on critical habitat, and the designation of critical habitat is itself too coarse a scale to inform salmon recovery planning within a watershed. Subsequent recovery actions that involve Federal funds, lands, or permits and that may affect critical habitat will be reviewed by NMFS to ensure such actions do not destroy or adversely modify critical habitat at that site.

Comment 51: Several commenters expressed the need to retain the momentum of locally led and collaborative efforts during Recovery Plan implementation. Comments included that local communities should have increased participation in implementation due to the voluntary nature of many of the actions in the Recovery Plan, that public education would be key to maintaining local support, that incentives for landowners would increase the likelihood of implementation, and that recognizing the role of Regional Fisheries Enhancement Groups in past salmon recovery efforts was important.

Response: NMFS agrees. Public involvement is essential to salmon recovery. The Recovery Plan builds on existing organizations and is itself a tool for public education. In the implementation processes already underway, as detailed in the implementation schedule in the Shared Strategy Plan (Chapter 9), various forms of incentives and innovative forms of partnership and collaboration are under consideration or proposed for funding. Please also see response to Comment 47.

Comment 52: One commenter suggested aligning other Federal processes with recovery efforts. Another suggested the need to better integrate the Recovery Plan with existing regulatory and management programs.

Response: NMFS agrees. Recovery plans provide a coordinated, big-picture view of a species' needs. NMFS staff is using the recovery plan for Puget Sound Chinook in its management and regulatory activities. The PSTRT's population identification and viability criteria are used in decision-making across all agency divisions. Other information provided in recovery plans, such as limiting factors and threats and geographic and temporal context for considering risks, will provide important context for evaluating the effects of actions subject to section 7 and for developing effective terms and conditions and conservation recommendations.

NMFS recognizes the need for better integration of existing regulatory and management programs and intends to focus on improved coordination among Federal agency programs as Recovery Plan implementation proceeds. NMFS is aware of several programs administered by the U.S. EPA, U.S. Army Corps of Engineers, U.S Forest Service, National Park Service, and Natural Resource Conservation Service that could be better coordinated with NMFS programs to maximize ecosystem and salmon recovery benefits. NMFS will work with representatives of other Federal agencies to improve coordination among Federal programs and funding initiatives during Recovery Plan implementation.

Comment 53: Some commenters offered suggestions for prioritizing recovery actions: one suggested prioritizing actions to meet delisting criteria before producing a harvestable surplus of fish, while another proposed prioritizing actions in relation to the potential effects of climate change.

Response: Earlier in 2006, the Puget Sound Salmon Recovery Council, watershed recovery plan implementation leads, and the PSTRT worked together to review proposed watershed implementation plans and establish priorities among actions. NMFS participated in that effort and supports the work of the watersheds to direct their initial priorities toward actions that are likely to result in near-term improvements for salmon and fill the gaps in their local plans that were identified by the PSTRT during watershed plan reviews. NMFS will review the status of the populations and the ESU at least every 5 years and will ensure that the status review findings are provided to Recovery Plan implementers so appropriate adjustments in priorities may be made.

Comment 54: One commenter praised the Recovery Plan's focus on institutionalizing commitments to the implementation of the plan through tools such as a "conservation agreement," but cautioned against the direct use of the Recovery Plan as the basis for directly offering any form of legal coverage under the ESA.

Response: Since salmon recovery plans are not regulatory documents, NMFS agrees that they cannot in themselves be used as substitutes for Habitat Conservation Plans, Section 7 permits, or other ESA regulatory assurances. Rather, the plans can provide important scientific information, recovery actions, and implementation schedules which in turn can be drawn upon as resources for crafting successful submissions for regulatory processes.

Comment 55: One commenter stated that existing regulatory mechanisms should not be branded as inadequate; instead, existing regulations should be enforced and then improved only if necessary.

Response: Duly noted.

FUNDING

Comment 56: Several commenters noted that successful Recovery Plan implementation would depend on financial support from the state and Federal governments. One commenter noted that the recovery strategies suggested a significant increase in funding across all levels of government would be needed. Another commenter suggested that NMFS must support a multi-agency effort to advocate for state and Federal funding. Comments also stressed the importance of funding accountability.

Response: The Recovery Plan states that substantial additional funds will be needed to implement the actions in the plan at both the regional and watershed level. NMFS acknowledges this need and agrees. However, significant benefits can also be gained by improved coordination of Federal programs to ensure that precious fiscal resources are targeted at the highest priorities. Also, collaboration on monitoring, data management, and reporting will be necessary to ensure coordinated accountability for high priorities and progress toward viability.

Comment 57: One commenter suggested that the funding strategy appears to concentrate almost entirely on protection and restoration projects and questioned the equity of this approach. Another stated that the protection of Puget Sound should be given a prominent place in the recovery strategy.

Response: NMFS believes protection of remaining functional habitat in Puget Sound is critical for salmon recovery. Further, NMFS understands that restoration of degraded habitat to provide needed ecosystem functions to support salmon is expensive, it takes time, and is not always successful. NMFS supports the Recovery Plan's overall approach, acknowledging the need for a combination of incentives and more effective regulation of land and water use. NMFS believes multiple approaches will be needed to reach the Recovery Plan's objectives.

Comment 58: Two commenters noted the importance of funding monitoring and adaptive management. Another commenter noted the need to ensure funding for a science advisory group.

Response: NMFS concurs. Rigorous monitoring and adaptive management frameworks are essential to have in place early in plan implementation, in order to ensure that the appropriate types and amounts of data are collected to assess the effectiveness of recovery actions and the progress towards recovery. The Shared Strategy is seeking significant funding to support implementation of the Recovery Plan, including the

adaptive management and monitoring program. NMFS expects the desired funding enhancements will be obtained and adaptive management and monitoring program will be implemented.

Comment 59: One commenter expressed support of distributing funds as specifically described in the draft plan.

Response: The Puget Sound Salmon Recovery Council considered a variety of funding allocation approaches during 2006 and will finalize a salmon recovery investment strategy by the end of the year. NMFS supports the Recovery Council's effort to allocate some funds to all watersheds, as Chinook populations in all Puget Sound watersheds need to improve from their current condition. NMFS further understands that each watershed is prioritizing its ten-year action plan and is establishing work plans in three-year increments in order to respond quickly to opportunities available through existing sources of funds and to assist in the identification of sources of funds. Further, NMFS agrees with the Recovery Council that tribal governments and some watershed groups will need additional staff resources to adequately implement the Recovery Plan. NMFS has encouraged the Recovery Council to align its funding allocation approach with the PSTRT's viability criteria as well, so that funding decisions are informed by the scientific guidance the PSTRT provided.

Comment 60: One commenter requested that NMFS endorse mitigation banking efforts and support expedited permit processing. Another commenter raised concerns about combining recovery funding needs with mitigation funding while another generally supported the pooling of mitigation and recovery funds as long as it was first considered to spend such funds within the subbasin in proximity to the site of the impact.

Response: NMFS currently is working with a multi-agency workgroup led by the U.S.Army Corps of Engineers, to explore ways to integrate requirements for listed species protection under the ESA with mitigation banking opportunities. The work group expects to identify methods for conducting mitigation banking that limit effects for fish while allowing project development. The multi-agency group has additional work to do before pilot or program results could be used to establish an integrated approach to mitigation banking and listed species protection in Puget Sound. NMFS will make products that could inform watershed planning groups or others interested in habitat protection and restoration available as they are completed.

Comment 61: One commenter suggested the Recovery Plan should include cost estimates for additional funding needs. Others expressed concern that the proposed budget does not fully fund the first ten years of implementation.

Response: NMFS believes that ten years is a reasonable period of time during which to implement and evaluate the actions identified in the Shared Strategy Plan to gain a preliminary view of the status and trends of important recovery indicators and make mid-course corrections as needed. NMFS further understands that each watershed area will, if it has not already done so, prioritize its ten-year actions and establish work plans in

shorter time-increments to match the availability of funding sources. NMFS strongly supports the intention stated in the Shared Strategy Plan to conduct additional economic analyses in the adaptive management process over time and to use these in realigning priorities as appropriate.

NMFS recognizes that the breadth and completeness of the time and cost estimate components of the local watershed plans is quite varied. NMFS anticipates that as implementation of the Recovery Plan proceeds and as watershed groups finalize their priorities for project implementation and sequencing, they will develop more explicit estimates of time and cost. The Shared Strategy Plan acknowledges that available funding may not fully cover each watershed's full ten-year plan. NMFS encourages regional leaders to address this issue as results and progress become apparent in the next ten years—they may need to re-evaluate the funding strategy to determine whether the fundraising goal will need to be adjusted.

Comment 62: One commenter suggested considering how much of the restoration work could be achieved using the private sector, and whether salmon restoration would be more cost effective if managed by a private sector organization rather than state and Federal agencies.

Response: - NMFS believes private sector involvement is critical to the overall success of salmon recovery in Puget Sound. NMFS agrees with the commenter that the Shared Strategy model is a good one for organizing multiple parties with diverse interests for the purposes of salmon recovery. Ultimately, NMFS expects a strong partnership between multiple interests, including tribal, Federal, state and local governments, individual citizens and the private sector will be necessary to implement the Recovery Plan and achieve salmon recovery in Puget Sound.

Comment 63: One commenter noted that the Recovery Plan failed to mention Corps of Engineers (COE) programs that could provide large amounts of money for restoration in the Puget Sound area. The commenter promoted better coordination with the COE since the COE is the primary regulatory and largest single habitat restoration agency in the Puget Sound area.

Response: NMFS agrees. Also see response to Comment #52.

Comment 64: Several commenters expressed concern that recovery efforts may be disproportionately focused in those areas that contain Chinook populations targeted for low risk status. The major issue identified was the need for funding to be equitably distributed to all areas and for all populations, as opposed to distributing the majority of recovery funds only to areas with populations targeted for low risk status. Commenters do not want the Recovery Plan to diminish investments in heavily developed areas.

Response: In the NMFS Supplement to the Shared Strategy Plan, ESU viability criteria developed by the PSTRT were adopted as ESU delisting criteria. NMFS will propose to delist the Puget Sound Chinook ESU when the criteria are achieved for the entire ESU.

Among the criteria is one identifying the need to manage at least two Chinook populations within each region to achieve viability and a low extinction risk status. Another criterion calls for achievement of a viable status for at least one population from each major genetic and life history group historically present within each region. The remaining four delisting criteria call for improvements in the status and habitat condition of all areas in the recovery planning region. Together, these six criteria describe the habitat conditions and status of Chinook salmon populations that would result in a naturally self-sustaining ESU with a high likelihood of persistence.

In the Supplement, NMFS identified the need for coordination within the agency's Northwest Region regulatory divisions regarding how to consistently apply these delisting criteria when reviewing proposed projects for ESA compliance and their effects on ESU recovery. This need exists because, in application, the criteria allow for a range of risks across populations within the region. The ESU viability criteria recommended by the PSTRT do not require that all 22 populations reach a low risk status over time, but all of them have to improve from current conditions. Accordingly, most watershed planners in areas with independent populations of Chinook salmon chose to work toward low risk status for their respective populations, setting the stocks on a trajectory towards recovery for the next ten years, and following a precautionary approach in reserving options for eventual recovery of the entire ESU. The result was that the Recovery Plan did not prioritize any of the 22 populations for recovery over any other populations. Table 1 in the NMFS Supplement to the Shared Strategy plan shows the 22 identified populations and relates them to the PSTRT's ESU viability criteria.

NMFS believes that a systematic approach is needed that identifies those Chinook salmon populations that should receive the agency's highest priority for its consultation and recovery activities, with the overarching goal of meeting ESU delisting criteria. This position is based on the premise that not all of the 22 Puget Sound Chinook salmon populations or watersheds harboring the species have the same role in terms of their contribution to the recovery and delisting of the ESU. Key considerations are the uniqueness, status, and physical location of the stock, the present condition and use of the population's freshwater, estuarine and adjacent nearshore habitats, and the likelihood for preserving and restoring those habitats given present and likely future condition. However, there is no intent to define populations and watersheds where protection and recovery actions should be neglected or abandoned. Although a "preserve and restore the best" strategy is sensible, all populations and watersheds will still need to be sufficiently protected to enable the production of sustainable anadromous salmon populations.

An approach that identifies populations and watersheds necessary to meet ESU delisting criteria is needed, given the rapid pace of human population growth and associated development in the Puget Sound region, increased competition for key natural resources including water and riparian and shoreline habitats, and the immediate need to protect remnant key populations and watersheds amidst regional growth and resource competition.

NMFS is working with the co-managers and the Puget Sound Salmon Recovery Council Work Group (the Salmon Recovery Council is a policy leadership body with wide representation that provides guidance on implementation of the Recovery Plan) to develop a biologically credible process for identifying which populations, watersheds and associated nearshore areas most need short-term protection and restoration investments. The approach should promote consistency in the ESU context between the watershed groups in implementing the Recovery Plan, and the ESA regulatory assessments by NMFS on similar actions.

PUGET SOUND TECHNICAL RECOVERY TEAM

Comment 65: One commenter asked whether PSTRT comments and reviews of the watershed plans were incorporated into the final plan.

Response: The PSTRT's reviews of the watershed plans are summarized in the watershed profile sections of Volume I of the Shared Strategy Plan. A link to the entire text of PSTRT reviews is provided in the NMFS Supplement. NMFS, therefore, considers these reviews incorporated in the Recovery Plan. In addition, the PSTRT and Shared Strategy have designated liaisons with the watershed groups to help guide plan implementation so that the identified gaps will be filled. All watershed groups have the PSTRT notes and have assured NMFS they are using them to guide implementation.

Comment 66: One commenter suggested that the *exact* language that the PSTRT used in their review of the Skagit watershed plan should be included in the Recovery Plan, as opposed to a summary of the PSTRT language. In addition, the commenter noted that the PSTRT assessed each watershed plan independently, but the Shared Strategy Plan lists the same 'uncertainties' for each watershed. The commenter suggested that the Recovery Plan should not assume that the PSTRT made the same assessment for each watershed.

Response: NMFS agrees that the PSTRT conducted individual reviews of each watershed plan and prepared technical notes regarding the relative certainty of the plan actions resulting in the plan's estimated benefits for salmon. Those notes are available for review at http://www.nwfsc.noaa.gov/trt/puget/trt_reviews_2005_final.pdf. NMFS did not change the Shared Strategy Plan's summary of any watershed plan in Volume I. Rather, NMFS augmented the Shared Strategy Plan as appropriate in its final 2006 Supplement to the Plan. NMFS supports the PSTRT's comments and conclusions about the Skagit watershed plan included in its technical review notes from 2005. Finally, NMFS agrees with the commenter that readers should not assume that the PSTRT made the same assessment or drew the same conclusions from each watershed review it conducted in 2005. The PSTRT review notes include watershed-specific evaluations, comments, and conclusions for each watershed included in the Recovery Plan.

BEST AVAILABLE SCIENCE

Comment 67: Multiple commenters raised the concern that the recovery planning area does not include the entire Strait of Juan de Fuca and requested expanding the boundary to Cape Flattery.

Response: The recovery planning area includes nearshore marine areas extending through the western Strait of Juan de Fuca region, but does not include watersheds west of the Elwha River (WRIA 19). The inclusion of watersheds up to and including the Elwha River comports with the intent of the Plan to recover all Chinook populations up to the westward extent of the boundary established by NMFS for the Puget Sound Chinook salmon ESU. Strait of Juan de Fuca nearshore marine areas westward of the Elwha River are essential feeding and migration areas for Chinook salmon populations delineated as part of the listed Chinook salmon ESU, and are therefore included in the recovery plan.

NMFS rationale for delineating the Elwha River as the western border for the now listed ESU is provided in the NMFS Biological Review Team's (BRT) west coast Chinook salmon status review document, completed by Northwest Fisheries Science Center staff in February 1998 (Myers et al., 1998). As background, the majority of BRT members concluded that, although the Elwha River watershed lies outside of the Puget Sound Ecoregion, the Chinook population in the watershed should be included in the Puget Sound Chinook salmon ESU, thereby marking the ESU's westward extent. The BRT found that the Elwha River Chinook salmon population was transitional in life history and genetic attributes between populations in Puget Sound and Washington Coast. The BRT determined that Chinook salmon runs west of the Elwha were not in the Puget Sound ESU. Following on the BRT's findings, NMFS determined in 1999 (64 FR 14308, March 24, 1999), and again in 2005 (70 FR 37160, June 28, 2005), that populations within the geographical boundaries of the Puget Sound Chinook salmon ESU warranted listing as threatened. The Washington Coastal Chinook salmon ESU, including populations within WRIA 19, was found at the time of the status reviews to be relatively healthy in status and not warranting ESA listing. Compelling scientific information sufficient for completion of a new species review process and rule-making would be required for any changes to the above NMFS determinations, including any ESU boundary change.

Comment 68: Multiple commenters raised the concern that the Recovery Plan did not adequately examine a variety of potential limiting factors; those cited most often were climate change and human population growth. Commenters also cited the need to more thoroughly address ocean conditions, over-harvesting, human disturbance, development, non-point source pollution, urban run-off, invasive and non-native species (including farmed salmon), predator impacts, gravel mining, Corps of Engineers dikes, and toxic chemicals.

Response: NMFS agrees that the plan did not fully address a variety of unpredictable limiting factors. These are factors that will be considered during the plan updates, as more information becomes available. The plan will be amended as appropriate over time, through adaptive management. Predicting the effects of climate change on salmon

recovery is an active area of research by NMFS and others, and the results of this research will be incorporated as they become available. For example, Northwest Fisheries Science Center (NWFSC) staff are currently using the results from global climate change models and regional sub-models to predict the effects of climate change on habitat attributes such as stream flow and temperature. These predictions are then used to estimate impacts on salmon population status, taking into account the actions in the proposed recovery plans. In addition, the recovery strategy included in one of the Puget Sound Basins—the Snohomish watershed—was chosen based on an explicit modeling analysis in which future land use, human population development, and future climate scenarios were included in the estimate of the recovery strategy effectiveness. Analyses of the effects of future climate and human development on recovery strategies are expected to be incorporated into future updates. Similarly, we are aware of other ongoing research at a variety of other organizations on the predicted effects of future urban development related to human population growth. We expect the results from these studies to influence future updates of the plan as they become available. Knowledge about the effects of changes in ocean conditions on salmon population status is increasing rapidly, and the TRTs' viability criteria are designed to ensure that ESUs will be viable under a range of ocean conditions. Predicting future ocean conditions remains a challenge, but as better information is developed in this area it will be incorporated into the recovery plans.

Comment 69: One commenter stressed the need to assess riparian areas from headwaters to the estuary; the commenter also stressed the importance of having large woody debris throughout entire stream systems.

Response: NMFS appreciates and has duly noted the information and ideas provided by the commenter about the importance of large woody material throughout a stream system. Retention and restoration of large wood was addressed by most of the watershed plans, and is recognized as an important ecological component.

Comment 70: One commenter questioned Chinook spawner abundance data and advocated for updating the abundance data based on the most recent information from the last five years.

Response: NMFS has updated the current spawner abundance data in Table 2 of the Supplement to reflect the most recent years for which information is available. In addition, further analyses, reports, and monitoring activities implemented as part of the adaptive management component of the Recovery Plan will take into account and report the most recent information.

Comment 71: One commenter asked NMFS to articulate the criteria used to identify 'primary' populations, i.e. those that need to be recovered to a low risk of extinction. The commenter's concern was that a policy decision emphasizing only the areas containing independent populations would shortchange other parts of the ecosystem that provide support to Chinook in all life stages, such as South Puget Sound. The commenter

specifically questioned whether NMFS has designated the Nisqually population as a primary population.

Response: In a July 2006 Technical Memorandum, the Puget Sound TRT explains its approach and criteria for identifying independent populations of Puget Sound Chinook salmon (Ruckelshaus et al., July 2006, NOAA Technical Memorandum NMFS-NWFSC-78), available online at http://www.nwfsc.noaa.gov/trt/puget/popidtm78final.pdf In that document, the PSTRT notes the importance of habitat for all life stages of salmon, not just the spawning areas (see p. 32-33), and recommends further research to identify habitat that should be protected or restored. NMFS accepts the PSTRT's population identification and viability criteria, and understands the criteria will be used by those implementing the Recovery Plan to establish priorities among recovery actions. However, the Recovery Plan recognizes that all populations of Chinook salmon in the ESU need to improve from their current status, and NMFS also acknowledges that improvements in habitat protection and restoration throughout the range of the ESU will likely be necessary to achieve recovery. Salmon recovery funding will be needed for all the Puget Sound watersheds.

In Table 1 of the Supplement, NMFS identified populations of Puget Sound Chinook that would need to achieve low risk status for the ESU as a whole to be viable. The PSTRT noted that, because of the good condition of habitat in the Nisqually watershed, the certainty that the Nisqually population could be recovered is among the highest in the Central/South Sound biogeographical region. NMFS concluded that "....the Nisqually population would need to achieve low risk under any recovery scenario ultimately selected for Puget Sound salmon" (see Supplement Section 2.3.1.1), based on consideration of the greater certainty of its recovery compared to the relatively large uncertainties associated with recovery of other Chinook populations in the same biogeographical region.

Comment 72: One commenter suggested creating an independent scientific review process to determine the adequacy of the final Recovery Plan and to evaluate Recovery Plan implementation. Several commenters expressed their hope that the PSTRT would have an ongoing guidance role in recovery planning, especially related to Recovery Plan implementation. Another suggested that any changes to the Recovery Plan should be reviewed by the PSTRT.

Response: NMFS appointed the Technical Recovery Teams in 2000 and charged them with the responsibility to identify populations, develop viability criteria, and ensure that the recovery plans were based on a solid scientific foundation. The Puget Sound TRT carried out this charge and reviewed the watershed and nearshore chapters in Volume II of the plan. Through the review process, the PSTRT provided technical feedback that NMFS expects will be used by the watershed groups across the ESU to guide their sequencing and implementation of recovery actions. NMFS expects that by following the PSTRT's review and feedback, watershed groups will move toward recovery of the populations in their areas in the next 10 years.

NMFS recognizes that salmon and steelhead recovery plans are being completed and implemented across the Northwest. As the region moves from plan development to plan implementation, NMFS believes it will be necessary to establish a scientific advisory body for implementation, monitoring, and adaptive management. The Northwest Regional Office and the Northwest Science Center currently are collaborating to decide on the best approach for establishing such a team or teams. We expect to begin the process of establishing such a body in early 2007.

Comment 73: One commenter noted that the Recovery Plan did not specifically address the needs of the yearling life history type.

Response: NMFS supports the need to improve habitat conditions to support all life history types of Puget Sound Chinook across the entire ESU. Several of the watershed plans focused on particular actions in the next ten years, directed at specific problems for a given life history type. Ultimately, improvements in all life history types are desired to increase the resilience of the ESU and to provide a buffer against uncertainties including, catastrophic events or climate change.

Comment 74: Some comments reflected the belief that the NMFS review of the Shared Strategy Plan was inadequate. One concern was that if gaps in the watershed chapters were not addressed, then the Recovery Plan would fall short of satisfying ESA requirements.

Response: In its review of the watershed plans, the PSTRT identified several uncertainties or gaps. The Recovery Plan includes measures to address these uncertainties or gaps. NMFS expects the measures to resolve the uncertainties in the Recovery Plan. See also response to Comment #65.

Comment 75: One commenter had concerns about the level of uncertainty associated with the EDT (Ecosystem Diagnostic Treatment) model and undue reliance on conclusions drawn by combining EDT derived values with values from other, more certain methods.

Response: The PSTRT comments reflect this uncertainty (and that from other analyses or approaches.) The uncertainty for each step in the logical chain from hypothesized problems to strategies to actions is documented in the PSTRT reviews. EDT addresses primarily the strategy step, and is scored as uncertain.

Comment 76: One commenter expressed concern that the plan was biased toward economic productivity rather than ecological viability. One concern was that using maximum sustained yield may imply that recovery is designed to serve socioeconomic interests.

Response: The recovery plan goal is to recover self-sustaining, harvestable salmon runs. For populations to be considered self-sustaining, they must fall within the population viability ranges derived by the PSTRT, which consider population abundance,

productivity, spatial structure, and diversity. The focus on productivity, spatial structure, and diversity assure that ecological viability is considered.

Comment 77: One commenter felt the Recovery Plan did not address the need to develop approaches for improving salmon habitat in highly urbanized environments.

Response: Each watershed plan aimed at a mix of recovery actions suited to the particular watershed, including more or less attention to opportunities and challenges of streams in highly urbanized environments. NMFS agrees that in dense urban areas, a complete return to less developed conditions that provide restored ecosystem processes is not feasible. NMFS believes future recovery actions should indeed address the need for innovative and unique approaches for improving salmon habitat in highly urban environments, such as Elliott or Commencement Bays. Local planning for revitalization, repair and replacement of aging structures provides opportunities to enhance, rehabilitate, or restore habitat conditions, depending on what is feasible at each site.

PLAN UPDATES OR REVISIONS

Comment 78: Several commenters questioned how the Recovery Plan and the individual chapters will be updated, and requested NMFS to identify the process.

Response: The ESA requires a review of all listed species at least once every five years. Guidance for these reviews is on the NMFS website http://www.nmfs.noaa.gov/pr/listing/reviews.htm. Additionally, NMFS Interim Endangered and Threatened Species Recovery Planning Guidance (NMFS 2004) requires a review of approved recovery plans immediately following the five-year species review, in conjunction with implementation monitoring, to determine whether the plan needs to be updated.

NMFS Recovery Guidance describes three types of plan modification: 1) an update; 2) a revision; or 3) an addendum. An update involves relatively minor changes. An update may identify specific actions that have been initiated since the plan was completed, as well as changes in species status or background information that do not alter the overall direction of the recovery effort. An update does not suffice if substantive changes are being made in the recovery criteria, or if any changes in the recovery strategy, criteria, or actions indicate a shift in the overall direction of recovery; in this case, a revision would be required. Updates can be made by the Salmon Recovery Division and would be forwarded to stakeholders and cooperators and posted on the NMFS website. An update would not require a public review and comment period. NMFS expects that updates will result from implementation of the adaptive management program for this plan.

A revision is a substantial rewrite of at least a portion of the recovery plan and is required if major changes are necessary in the recovery strategy, objectives, criteria, or actions. A revision may be required if new threats to the species are identified, when research identifies new life history traits or threats that have significant recovery ramifications, or

when the current plan is not achieving its objectives. Revisions represent a major change to the recovery plan and must include a public review and comment period.

An addendum can be added to a recovery plan after it has been approved and can accommodate minor information updates, for example, updates of implementation strategies.

Comment 79: One commenter felt that NMFS should support the recovery targets developed in the Recovery Plan and should not let revisions and comments diminish the likelihood of achieving recovery.

Response: NMFS commends the watershed groups that adopted recovery planning targets to catalyze their local recovery planning efforts and direct watershed actions toward a common goal. NMFS does support these targets. NMFS believes immediate implementation of priority recovery strategies and actions is necessary to increase the likelihood of achieving recovery.

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